

REMARKS

The Office Action of February 18, 2009 has been reviewed and the Examiner's comments carefully considered. No amendments to the claims have been presented by way of this Response. Accordingly, claims 26-49 and 51-53 are currently pending in this application with claim 26 being in independent form, claim 50 being previously cancelled.

Rejections Under 35 U.S.C. §103(a):

Claims 26-49 and 51-53 stand rejected under 35 U.S.C. §103(a) for obviousness over U.S. Patent No. 4,422,210 to Bergsand et al. (hereinafter "Bergsand") in view of U.S. Patent No. 5,437,248 to Miura et al. (hereinafter "Miura"). Claims 26-49 and 51-53 stand rejected under 35 U.S.C. §103(a) for obviousness over U.S. Patent No. 4,724,007 to Barry et al. (hereinafter "Barry") in view of Miura. Claims 26-49 stand rejected under 35 U.S.C. §103(a) for obviousness over U.S. Patent No. 5,348,234 to v.d. Woude (hereinafter "Woude") in view of Miura. These rejections are respectfully traversed.

Independent claim 26 defines a combination of a device for cleaning fire tubes in a boiler and a boiler provided with fire tubes. The cleaning device includes a scraper member that is fixed to a movement member for moving the scraper member through one fire tube at a time, and a guide for positioning the scraper member directly in front of the open end of a fire tube such that the scraper member is movable from the guide into the fire tube and conversely from the fire tube into the guide. The boiler is provided with fire tubes, which open at one end of the boiler. The guide is movable transversely with respect to the longitudinal direction of the fire tubes on a frame that is located at the end of the boiler where the fire tubes open. A flue box is located at the end of the boiler where the fire tubes open and has openings that are each located opposite a fire tube. Each opening in the flue box is provided with a closing valve and the cleaning device is provided with an operating mechanism that can be brought into interaction with one of the closing valves in each case for opening the closing valve.

Accordingly, the problem that the present invention intends to solve is to provide for the cleaning of fire tubes in a boiler while flue gases are present within the tubes. A high temperature prevails in the flue chamber and the flue gases give rise to a hostile environment.

This has an adverse effect on a device, for instance a mounting frame for a scraper member, for the cleaning the interiors of the fire tubes.

According to the present invention, the cleaning should take place while the boiler is in operation. This is illustrated at page 5 of the specification, which states that hot flue gases are produced, which flow through the fire tubes. Please note page 5, line 23 of the specification. Further, this is illustrated at page 6 of the specification, which describes cleaning by the scraper member. The scraper member (14) is moved back and forth along the longitudinal axis of the fire tube (3). Contaminants are loosened and carried away with the flue gases or are collected in the collection means. Please note page 6, lines 22-25 of the specification.

Applicant respectfully submits that in order to establish a *prima facie* case of obviousness, three criteria must be met. First, the modification or combination must have some reasonable expectation of success. Second, the prior reference or combined references must teach or suggest all the claim limitations. MPEP §2143. Finally, an apparent reason for one of ordinary skill in the art to combine the prior art teachings to reach the claimed invention should be identified. *KSR Int'l Co. v. Teleflex, Inc.*, 82 USPQ2d 1385 (U.S. 2007). The analysis of an obviousness finding should be made explicit. *Id.*

Applicant submits that Bergsand, Barry, Woude and Miura, taken separately or combined, fail to teach or suggest the above-mentioned claimed subject matter of independent claim 26.

Bergsand teaches an installation for internal cleaning of recently drawn metal tubes (14) utilizing cleaning fluids. After the tubes (14) are drawn, their exteriors are cleaned by an installation for exterior cleaning (11) that uses brushing and/or other mechanical treatment. The interior of the tubes (14) may then be scraped down by pushing a plug through the interior of the tube (14). A plurality of tubes (14) are then collectively connected to connecting means (16, 17) that place the interior of the tubes (14) in communication with a source of cleaning fluid, which is flushed through the tubes (14). Please note Figs. 1-5 and column 2, line 21 to column 5, line 20 of Bergsand.

Barry teaches an apparatus and method for cleaning pipes or tubes (11) in a tube bundle (20) for a heat exchanger. The cleaning process utilizes a water hammer created by a

launcher (10) having a high pressure pump (19) and a launcher tip (14) associated with an open end of a tube (11) to produce a shock wave that drives a relatively incompressible pig, for instances a block of ice, through the tube (11). The travelling pig is combined with a flushing liquid to clean the interiors of the tubes (11). Please note Figs. 1-5 and column 8, line 44 to column 9, line 31 of Barry.

Woude teaches a cleaning lance machine (1) for cleaning vertical pipe bundles in heat exchangers (2, 3). Simultaneously, a plurality of lances (25) is inserted in a corresponding plurality of pipes (5) in the bundle. Through each lance (25), a liquid is supplied to flow into the corresponding pipe (5) at a high pressure for cleaning the pipe (5).

Miura is cited for the teaching of a boiler having a plurality of fire tubes (51), which could conceivably be cleaned by any one of the cleaning devices taught by Bergsand, Barry and Woude. Miura does not specifically teach or suggest any method or device for cleaning the fire tubes (51), especially while the boiler is in operation.

In order to provide for cleaning of the fire tubes of the boiler while the boiler is still in operation, independent claim 26 positively recites a flue box located at an end of the boiler where the fire tubes open that has openings located opposite each fire tube and a closing valve associated with each opening, while the cleaning device is provided with an operating mechanism that can engage each closing valve to open the valve. By using closing valves for openings in the rear plate of the flue box it is possible to position the cleaning device outside of the flue box. Accordingly, the hot and hostile conditions within the flue box will not have an adverse effect on the functioning of the cleaning device and the movement of the scraper while still enabling cleaning of the fire tubes during operation of the boiler. Please note page 2, lines 17-20 of the specification.

None of Bergsand, Barry or Woude teaches or suggests a flue box having openings and respective closing valves opposite to an end of each of a plurality of fire tubes or an operating mechanism associated with the cleaning device for opening the closing valves, as is claimed in claim 26.

Rather, Bergsand teaches a device for cleaning recently drawn pipes with fluids and does not provide any teaching or suggestion as to the claimed flue box. The connecting

means (16, 17) taught by Bergsand are for connecting the recently drawn tubes to a supply of cleaning fluid. There is no teaching in Bergsand, explicit or inherent, suggesting that these connecting means can open a closing valve on a flue box.

Barry and Woude both teach devices for cleaning a bundle of pipes in a heat exchanger. Neither of these references provides any teaching as to the claimed flue box. Further, neither of these references provides any teaching, explicit or inherent, suggesting that the cleaning devices include a mechanism that can open a closing valve on a flue box.

Miura does not teach or suggest a flue box having openings and respective closing valves opposite to an end of each of a plurality of fire tubes or an operating mechanism associated with the cleaning device for opening the closing valves, as is claimed in claim 26. Miura, therefore, does not fairly suggest a modification to the teachings of Bergsand, Barry and/or Woude, which achieves the invention claimed in claim 26.

Applicant submits that independent claim 26 is allowable for at least the foregoing reasons, as the teachings of the prior art of record, including Miura, are not sufficient to overcome the deficiencies in the teachings of Bergsand, Barry and/or Woude with respect to claim 26. Applicant respectfully requests that the rejections of this claim be withdrawn.

Claims 27-49 and 51-53 are dependent upon and add further limitations to independent claim 26 and are allowable for at least the same reasons discussed above in connection with claim 26. Applicant respectfully requests that the rejections of these claims be withdrawn.

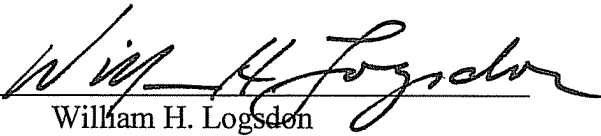
Further, Applicant notes that the specific claimed subject matter of many of the dependent claims are not readily identifiable in applied prior art references, nor does the Office Action provide any further explanation as to prior art teachings, common knowledge in the art or other rationale that renders these claims obvious. Applicant traverses the rejections of all of dependent claims 27-49 and 51-53, individually, and submits that Bergsand, Barry, Woude and Miura, taken separately or combined, fail to teach or suggest the claimed subject matter of any one of claims 27-49 and 51-53.

Application No. 10/561,534
Paper Dated: August 18, 2009
In Reply to USPTO Correspondence of February 18, 2009
Attorney Docket No. 0470-053863

Conclusion:

In view of the above remarks, reconsideration of the rejections and allowance of claims 26-49 and 51-53 are respectfully requested.

Respectfully submitted,
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